

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	(distributed adj point adj source adj method)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/11/16 15:06
S2	1812	703/2.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/06/01 16:54
S3	548	703/2.ccls. magnet\$2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	OFF	2006/06/01 16:54
S4	237	703/2.ccls. magnet\$2 matrix	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	OFF	2006/06/01 16:54
S5	78	703/2.ccls. magnet\$2 matrix wave	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/01 16:54
S6	35	703/2.ccls. magnet\$2 matrix wave mesh	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/01 16:58
S7	31	703/2.ccls. magnet\$2 matrix wave mesh surface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:23
S8	1102774	wave	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:23

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S9	221862	magnet\$3 wave	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:24
S10	28052	magnet\$3 wave matrix	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:24
S11	9326	magnet\$3 wave matrix vector	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:24
S12	7900	magnet\$3 wave matrix vector multipl\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:24
S13	6169	magnet\$3 wave matrix vector multipl\$3 surface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:24
S14	445	magnet\$3 wave matrix vector multipl\$3 surface obstacle	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:25
S15	330	magnet\$3 wave matrix vector multipl\$3 surface obstacle interact\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:25
S16	54	magnet\$3 wave matrix vector. multipl\$3 surface obstacle interact\$3 mesh\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:26

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S17	64	electric\$3 wave matrix vector multipl\$3 surface obstacle interact\$3 mesh\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:28
S18	56111	(magnet\$2 with wave)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:28
S19	446	(magnet\$2 with wave) surface mesh matrix	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:29
S20	15	(magnet\$2 with wave) surface mesh matrix obstacle	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/06/06 12:29
S21	11632	hemispher\$ wave	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/11/16 15:06
S22	2508	hemispher\$ wave (matrix or matrices)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/11/16 15:07
S23	2334	hemispher\$ wave (matrix or matrices) surface.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/11/16 15:07
S24	2144	hemispher\$ wave (matrix or matrices) surface system	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/11/16 15:08

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S25	1542	hemispher\$ wave (matrix or matrices) surface system medium	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/11/16 15:08
S26	129	hemispher\$ wave (matrix or matrices) surface system medium obstacle	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/11/16 15:08
S27	126	hemispher\$ wave (matrix or matrices) surface system medium obstacle (transmi\$4 or reflect\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2006/11/16 15:09

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### Nicolas Tsingos Homepage

Nicolas Tsingos, Tom Funkhouser, Addy Ngan & Ingrid Carlbom. **Geometrical Theory of Diffraction** for Modeling Acoustics in Virtual Environments. ...  
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## Placko Dominique

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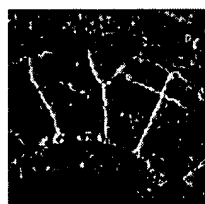
Dominique Placko est né à Paris en 1957. Il a obtenu l'Agrégation de Génie Electrique en 1981, soutenu une thèse de 3ème cycle en 1984, et présenté l'Habilitation à diriger des recherches en sciences en 1990 à l'Université Paris Sud Orsay, France. Depuis 1993, il occupe un poste de professeur à l'Ecole Normale Supérieure de Cachan, où il enseigne au niveau préparation à l'Agrégation et DEA, dans le domaine de l'électronique et du traitement du signal. Son activité de recherche se situe dans le domaine des capteurs et de l'instrumentation, au Laboratoire SATIE UMR 8029 CNRS, Cachan. Dominique Placko est auteur ou co-auteur de plus de soixante articles ou communications scientifiques, cinq ouvrages et a participé au dépôt de douze brevets français ou internationaux dans le domaine des capteurs, de l'électronique et du traitement du signal (par exemple : travaux sur les sondes multicapteurs à courants de Foucault pour le contrôle de tubes de générateurs de vapeur de centrale nucléaire). Il est depuis janvier 2001 rédacteur en chef de la revue "Instrumentation, Mesure et Métrologie" (I2M), publiée aux éditions Hermes. Dominique Placko a reçu la Médaille BLONDEL en 1998.

## Thèmes de Recherche

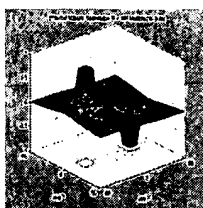
**Capteurs et Instrumentation** : Son activité de recherche se situe dans le domaine des capteurs et de l'instrumentation.

## Ateliers Scientifiques

### Projets



**Amélioration d'une caméra photothermique par traitement d'image adapté à la détection de fissures** La caméra photothermique permet d'exploiter l'effet de barrière thermique produit par une fissure présente dans une cible thermiquement conductrice. Le signal obtenu est représentatif de cette barrière thermique et doit permettre de détecter, et dans une certaine mesure, de caractériser la fissure rencontrée. Cependant, le signal fourni par la caméra est également dû à d'autres grandeurs sources, ...



**Modélisation par Sources Ponctuelles Réparties** Le projet de modélisation par sources ponctuelles réparties consiste à développer une nouvelle méthode originale et générique de modélisation des capteurs électrostatiques, électromagnétiques et ultrasonores, fondée sur une distribution spatiale de sources ponctuelles de flux et/ ou de courant, disposées uniquement sur les surfaces actives des éléments de la configuration étudiée. ...

## Travaux et Publications (à partir de 2000)

### Enhancement of open-crack detection in flying-spot photothermal non-destructive-testing using physical effect identification :

- Pierre-Yves Joubert - Sébastien Hermosilla-Lara - Dominique Placko - François Lepoutre - Marc Piriou
- QIRT Journal vol 3 N°1/2006, pages 53-70.

### Amélioration de la détection de fissures ouvertes en contrôle non destructif photothermique :

- Sébastien Hermosilla-Lara - Pierre-Yves Joubert - Dominique Placko
- Colloque Interdisciplinaire en Instrumentation, Cachan, 29-30 janvier 2004, volume 2, pages 289-297, Editions Hermès.

### Study of the structure of PZT films : influence of the thermal treatments. Advanced ferroelectric characterisation :

- Lionel Cima - Dominique Placko
- D. Pennanéac'h, L. Cima, C. Leluyer, K. Nakatani, D. Placko, Eur. Phys. J. Appl. Phys., 25, pp. 97-106 (2004)

### Identification of thermal and optical effects for the detection of open-crack in photothermal non destructive testing :

- Sébastien Hermosilla-Lara - Pierre-Yves Joubert - Dominique Placko
- Eur. J. Appl. Phys. 24, 223-229 (2003)

### an active infrared camera to detect open cracks : an old idea emerging owing to signal processing :

- François Lepoutre - Sébastien Hermosilla-Lara - Pierre-Yves Joubert - Dominique Placko - Marc Piriou
- In proceedings of 7th International workshop on advanced Infrared Technology and Applications, Pisa (Italy), september 9-11, 2003.

### Localisation of defects in steam generator tubes using a multi-coil eddy current probe dedicated to high speed inspection. :

- Pierre-Yves Joubert - Yann Le Bihan - Dominique Placko
- NDT & E International, vol. 35, janvier 2002, pp. 53-59

### The distributed source method : a concept for open magnetic cores modelling :

- Nicolas LIEBEAUX - Dominique Placko
- European Physical Journal Applied Physics, 20, pp 145 à 150 (2002).

### Enhancement of open-cracks detection using a principal component analysis / wavelet technique in photothermal nondestructive testing :

- Sébastien Hermosilla-Lara - Pierre-Yves Joubert - Dominique Placko - François Lepoutre - Marc Piriou
- QIRT 2002, 23-27 September 2002, Dubrovnik, Croatia.

### A Theoretical Study of Ultrasonic Sensors : Dependence of Acoustic Pressure on the Sensor Geometry in Presence of an Interface :

- Dominique Placko - Tribikram Kundu

- SPIES'7 th Annual International Symposium on NDE for Health Monitoring and Diagnostics, March 2002, SanDiego, California, USA

**Modeling Ultrasonic Field in Presence of a scatterer by the Distributed Point Source Method (DPSM) :**

- Dominique Placko - Tribikram Kundu - R. Ahmad  
- Invited post-deadline paper, Structural and Health Monitoring (SHM'2002), Cachan, France, juillet 2002.

**Wall thickness evaluation of single-crystal hollow blades by eddy current sensor. :**

- Yann Le Bihan - Pierre-Yves Joubert - Dominique Placko  
- NDT & E International, vol. 34, n° 5, juin 2001, pp. 363-368.

**Signal processing techniques for the improvement of the open-cracks detection using photothermal camera. :**

- Sébastien Hermosilla-Lara - Pierre-Yves Joubert - Dominique Placko - François Lepoutre - Marc Piriou  
- IVth International Workshop Advances in Signal Processing for Non Destructive Evaluation of Materials, Québec, Canada, 7-10 août 2001, pp. 105-110.

**Eddy current technique applied to the nondestructive evaluation of turbine blade wall thickness. :**

- Yann Le Bihan - Pierre-Yves Joubert - Dominique Placko  
- Nondestructive Evaluation of Aging Aircraft, Airports, and Aerospace Hardware IV, Newport Beach, Californie, USA, 7-8 mars 2000, pp. 145-153.

**Capteur à courants de Foucault pour l'évaluation non destructive de l'épaisseur de paroi d'aubes de turbine creuses. :**

- Yann Le Bihan - Pierre-Yves Joubert - Dominique Placko  
- Colloque Interdisciplinaire en Instrumentation (C2I 2001), Paris, France, 31 Janvier-1er Février 2000, in « Systèmes et Microsystèmes pour la caractérisation, vol. 2, Hermès, 2001, pp 245-242.

**La camera photothermique, partie II – Applications industrielles, perspectives d'amélioration par un nouveau traitement d'image :**

- Sébastien Hermosilla-Lara - Pierre-Yves Joubert - Dominique Placko  
- et al. Instrumentation Mesure et Métrologie, Evaluation non destructive, Hermès Publications, Paris, vol. 1, n°1-2, 2001, pp.41-67.

**Modèle à sources magnétiques réparties : un concept pour le calcul du champ émis par les dispositifs comportant un circuit magnétique ouvert :**

- Nicolas LIEBEAUX - Dominique Placko  
- Instrumentation pour les mesures physiques, Colloque Instrumentation et Interdisciplinarité, PARIS, France, 31 janvier - 1 février 2001, pp 523-530.

**Méthode générique pour la modélisation des capteurs de types ultrasonore, magnétique et électrostatique :**

- Dominique Placko - Nicolas LIEBEAUX - Tribikram Kundu  
- Instrumentation, Mesure, Métrologie, vol. 1, 2001, pp. 101-125.

**A Theoretical Study of Magnetic and Ultrasonic Sensors : Dependence of Magnetic Potential and Acoustic Pressure on the Sensor Geometry :**

- Dominique Placko - Tribikram Kundu  
- Proceedings SPIES'6 th Annual International Symposium on NDE for Health Monitoring and Diagnostics, Vol 4335, pp 52-62, 4-8 March 2001, Newport Beach, California, USA

**Distributed Point Source Method (DPSM) for Modeling Ultrasonic Fields in Homogeneous and Non-Homogeneous Fluid Media :**

- Dominique Placko - Tribikram Kundu - R. Ahmad
- ICTACEM 2001 Mechanics Conference, Kharagpur, India, décembre 2001

**Multi-Segment Probe and Associated Signal Processing for Defect Classification in Eddy Current Tube Testing. :**

- Pierre-Yves Joubert - Denis Prémel - Dominique Placko
- Progress in Electromagnetic Research Symposium 2000, Low-frequency Nondestructive Testing of Conductive Structures Session, Cambridge, Massachussets, USA, 7-14 juillet 2000, p257, Invited paper.

**A Model of Cup-Core Probe for Eddy Current Nondestructive Evaluation :**

- Nicolas LIEBEAUX - Yann Le Bihan - Dominique Placko
- IMTC 2000, Proceedings of the 17th IEEE Instrumentation and Measurement Technology Conference, Baltimore, Maryland, USA, 1-4 mai 2000.



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### A BRIEF DESCRIPTION OF DR. TRIBIKRAM KUNDU

Professor T. Kundu received his bachelor degree in Mechanical Engineering from the Indian Institute of Technology, Kharagpur in 1979. His M.S. and Ph.D. were from the Department of Mechanics and Structures at the University of California, Los Angeles in 1980 and 1983, respectively. He joined the Department of Civil Engineering and Engineering Mechanics of the University of Arizona as an Assistant Professor in August 1983 and was promoted to full professor in 1994.

Dr. Kundu has made significant and original contributions in both basic and applied research in nondestructive testing techniques (NDT) for engineering and biological material characterization by ultrasonic techniques. His fundamental research interests are in the analysis of elastic wave propagation in multi-layered solids, fracture mechanics, computational mechanics, geo- and biomechanics. Application areas of his research findings include civil and structural materials, aerospace materials, geomaterials, electronic and biological materials. He is editor/co-editor of 15 books (12 conference proceedings and 3 edited books), author/co-author of 1 text book, 9 book chapters, and 185 technical papers; 92 of those have been published in refereed scientific journals, the rest appeared in international scientific conference proceedings. He is a Fellow of ASME (American Society of Mechanical Engineers), ASCE (American Society of Civil Engineers), and SPIE (The International Society for Optical Engineering), and a life member of AvHAA (Alexander von Humboldt Association of America). He is the Chairman of the SPIE yearly conference on Health Monitoring of Structural and Biological Systems (held in March of every year). He has served as the Chairman of the ASME NDE Engineering Division from 2003 to 2005 and is currently serving as the Associate Editor of ASME Journal of Pressure Vessel Technology; he also serves on the editorial advisory board of the International Journal of Geomechanics. He is a member of AAM (American Academy of Mechanics), ASNT (American Society of Nondestructive Testing) and ASA (Acoustical Society of America). He has extensive collaborations with international and US scientists. He has spent 28 months in the Department of Biology, J. W. Goethe University, Frankfurt, Germany, first as an Alexander von Humboldt Fellow and then as a Humboldt Research Prize winner. He has also spent one month to one year in each of the following institutes as an Invited Professor

- Department of Mechanics, Chalmers University of Technology, Gothenberg, Sweden
- Acoustic Microscopy Center, Semenov Institute of Chemical Physics, Russian Academy of Science, Moscow
- Department of Civil Engineering, EPFL (Swiss Federal Institute of Technology in Lausanne), Switzerland
- Department of Mechanical Engineering, University of Technology of Compiègne, France
- Materials Laboratory, University of Bordeaux, France
- Electrical Engineering Department (SATIE Lab.), Ecole Normale Supérieure (ENS), Cachan, France
- Aarhus University Medical School, Aarhus, Denmark
- Department of Applied Physics, University of Leipzig, Germany
- Nondestructive Evaluation branch of the Wright-Patterson Material Laboratory, Dayton, Ohio.

Dr. Kundu has received a number of recognitions, some of those are listed below.

- Elected Fellow of SPIE (the International Society for Optical Engineering), 2005
- Humboldt Research Prize from Germany, Senior Scientist Award, 2003
- Elected Fellow of ASCE (American Society of Civil Engineers) in 2000
- Elected Fellow of ASME (American Society of Mechanical Engineers) in 1999
- Best Paper Award 2004 from SPIE
- Best Paper Award 2000 from SPIE
- Best Paper (where his graduate student is the leading author) Award 2001 from ASME NDE Division
- Alexander von Humboldt Stiftung Fellowship from Germany in 1996-97 and 1989-90
- Outstanding Honors College Faculty Award by the University of Arizona Honors College, 2002
- Outstanding Asian Faculty Member of the year award at the University of Arizona in 1995
- University of California Regents' Fellowship 1979-81
- UCLA Alumni Award as the Outstanding Graduate Student of the year in the College of Engineering, 1981
- President of India Gold Medal for ranking first among all graduating engineers from I.I.T. Kharagpur in 1979
- Jagadish Bose National Science Talent Search (JBNSTS) Scholarship – one of 8 recipients in India – 1974-79

### PROFESSIONAL SOCIETY AND OTHER ORGANIZATIONAL ACTIVITIES

Dr. Kundu was one of the four organizers of the Second International Conference on *Constitutive Laws for Engineering Materials* that was held in Tucson in January 1987.

Organized the First Symposium on *Acousto-Optics and Acoustic Microscopy* in 1992 ASME Winter Annual Meeting in Anaheim California.

Organized A Second Symposium on *Acoustic Microscopy for Material Characterization* in 1998 International Mechanical Engineering Congress and Exposition in Anaheim California.

Organized a symposium on the *Recent Advances of the Ultrasonic NDE and Composite Material Characterization* in the International Mechanical Engineering Congress and Exposition in Nashville, Tennessee, Nov.14-19, 1999.

Dr. Kundu co-organized a symposium on NDE entitled *Nondestructive Evaluation and Characterization of Engineering Materials for Reliability and Durability Predictions*, in the International Mechanical Engineering Congress and Exposition in Orlando, Florida, Nov.5-10, 2000.

March 2000, Vice-Chairman of the SPIE (the International Society for Optical Engineering) conference on NDE of Aging Airplanes and Aircraft Structures, Newport Beach, California.

January 2001, Co-chairman of the 10<sup>th</sup> International Conference of IACMAG (International Association for Computer Methods and Advances in Geomechanics), Tucson, Arizona, January 7-12, 2001

March 4-8, 2001, Chairman of the SPIE conference on the Advanced NDE for Health Monitoring of Structural and Biological Materials (ND01), SPIE's 6<sup>th</sup> Annual International Symposium, in Newport Beach, California. As the chairman he doubled the number of conference participants in comparison to the previous year.

April 23-25, 2001, Co-Chairman of the 7<sup>th</sup> ASME NDE Topical Conference in San Antonio Texas

December 27-30, 2001, Chairman of the Scientific/Technical Committee of the Second International Conference on Theoretical, Applied, Computational and Experimental Mechanics, Kharagpur IIT, India

March 17-21, 2002, Chairman of the SPIE conference on Smart NDE for Health Monitoring of Structural and Biological Systems, San Diego, California.

July 10-12, 2002, and July 7-9, 2005 International Scientific Committee member of the First and Second European Workshop on Structural Health Monitoring, at ENS Cachan, France.

Dr. Kundu served as the Program representative of the ASME NDE Division in 1999, 2000, 2001 and 2002 for the IMEC&E (Int. Mech. Engineering Congress and Exposition). As the program representative he initiated the participation of the NDE Division at IMEC&E.

In 2002 IMEC&E he served as the M&S (Materials and Structures) group representative. As the group representative he is in charge of allocating sessions to the Materials Division, Pressure Vessels and Piping Division and NDE Division.

March 2-6, 2003, Chairman of the SPIE conference on Smart NDE and Health Monitoring of Structural and Biological Systems, San Diego, California

March 14-18, 2004, Chairman of the SPIE conference on Health Monitoring and Smart NDE of Structural and Biological Systems, San Diego, California

One of two Co-organizers from the US side (the other co-organizer was Prof. M. P. Singh of Virginia Tech.) for the Joint US-India Workshop on Advanced Sensing Systems and Smart Structures Technologies, in cooperation with IIT Bombay, on December 20-22, 2004. This workshop was jointly funded by the NSF and IIT Bombay.

Organizing Committee Co-Chairman of the 3<sup>rd</sup> International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2004) in Kharagpur, India, Dec. 28-30, 2004

March 6-10, 2005, Chairman of the SPIE conference on Health Monitoring and Smart NDE of Structural and Biological Systems, San Diego, California

2003 - 2005, Chairman of the NDE Engineering Division of ASME. NDE is one of 37 Technical Divisions of ASME.

February 26 - March 2, 2006, Chairman of the SPIE conference on Health Monitoring and Smart NDE of Structural and Biological Systems, San Diego, California

March 18-20, 2007, Chairman of the SPIE conference on Health Monitoring of Structural and Biological Systems, San Diego, California



**Service Activities within the University of Arizona**

At the University of Arizona Dr. Kundu Represented the College of Engineering at the Undergraduate Council, the University Committee that makes the recommendation to the President and Provost's office on any policy change related to the undergraduate education, 2005-2007.

Dr. Kundu represented the Civil Engineering and Engineering Mechanics Department in the College Advisory Committee that advises the Dean of Engineering on college policies and affairs.

Served in the Promotion and Tenure (P&T) Committee (also known as the Faculty Status Committee) and Post-Tenure Review Committee for the College of Engineering.

Served as the Chairman of the P&T Committee of the Dept. of Civil Engineering and Engineering Mechanics

Served as the Chairman of the Annual Performance Evaluation and Post Tenure Review Committee of the Civil Engineering and Engineering Mechanics Department. Dr. Kundu, as the Chairman of this important committee, was the main architect of the faculty performance evaluation guidelines that were adopted by the department and are followed today for the faculty performance evaluations.

<b>A BRIEF DESCRIPTION OF THE RESEARCH INTEREST</b>
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Dr. Kundu has made significant and original contributions in both basic and applied research in nondestructive testing techniques (NDT) for material characterization by ultrasonic techniques and acoustic microscopy, elastic wave propagation in multilayered solids, fracture mechanics, computational mechanics, geomechanics and numerical modeling. Application areas of his research findings include aerospace materials, civil and structural materials, geomaterials, electronic as well as biological materials. His research on biological material characterization has also received international acclaim. He has won the Humboldt research prize (also known as the Senior Scientist Award) from Germany for his research on biological cell characterization.

Dr. Kundu has collaborated with European scientists on theoretical and experimental research on engineering and biological materials. Most of his European collaborations have been funded by foreign funding agencies in Germany (Alexander von Humboldt Foundation), Belgium (NATO, North Atlantic Treaty Organization), France (French Ministry of Education), Denmark (Aarhus University Medical School), Sweden, Switzerland, and so on. Among domestic sources, the National Science Foundation and the Air Force Research Laboratory have provided the lion share of his research funding.

He has organized a number of international conferences and symposia as mentioned in the previous section.

<b>TEACHING EXPERIENCE</b>
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Professor Kundu has taught a variety of courses on mechanics and numerical methods. These include undergraduate courses on Statics, Dynamics, Strength of Materials, Structural Analysis, Finite Element Methods, computer programming and numerical analysis. At the graduate level he has taught courses on Continuum Mechanics, Elasticity, Plasticity, Advanced Finite Element Analysis, Fracture Mechanics and Elastic Wave Propagation. He has developed the last three graduate courses at the University of Arizona and thoroughly revised the first three. He has co-authored a textbook on Introductory Finite Element Method and edited a book on Ultrasonic Nondestructive Evaluation that can be used as a textbook or reference book for a graduate level course on elastic waves. He has supervised 14 M.S. students (2 jointly), 24 Ph.D. students (9 jointly and 2 in Foreign Institutes), and 7 post-doctoral research scholars. He is currently supervising 1 M.S. student and 4 Ph.D. students. In 1999 his M.S. student (Y.C. Jung) received the best MS thesis award at the University of Arizona. Only one MS thesis was selected for this award in 1999 among all fields of science, engineering and humanities. In three consecutive years 2000, 2001 and 2002 his Ph.D. student Mr. C. M. Dao received the Bill Gates Millennium scholarship. In the year 2000 Dr. Kundu received a Letter of Commendation from the Graduate College of the University of Arizona for his contributions in graduate teaching, research and mentoring activities. In May 2002 he received a special recognition as the *Outstanding Honors Faculty*, awarded by the University of Arizona and the Honors College for his 'outstanding and dedicated service in guiding undergraduate students of the Honors College'.

## CURRICULUM VITAE

**TRIBIKRAM KUNDU, Professor**  
**Department of Civil Engineering and Engineering Mechanics**  
**University of Arizona, Tucson, Arizona 85721**  
**Home: (520)297-2962, Office: (520)621-6573, Fax: (520)621-2550**  
**tkundu@email.Arizona.edu**

**PERSONAL DATA:** Citizen of U.S.A., Married, Two Children

**EDUCATION:**

1979 B.Tech. Mechanical Engineering, I.I.T. Kharagpur, India  
Ranked first among all graduating engineers (about 300) of all majors.

1980 M.S. Solid Mechanics, U.C.L.A., USA, GPA - 4.0/4.0  
Thesis: Diffraction of Elastic Waves by a Surface Crack in a Plate.  
Ranked first among all M.S. candidates in engineering.

1983 Ph.D. Solid Mechanics, U.C.L.A., GPA - 4.0/4.0  
Dissertation: Elastic Wave Propagation in Multilayered Solids  
Graduate Advisor: Professor A. K. Mal

**HONORS AND AWARDS:**

**Elected Fellow of SPIE** (the International Society for Optical Engineering) 2005

**Best Paper Award 2004 from SPIE** – Received for the paper, "Bio-soft matter imaging and micro-metrology by Phase-sensitive ultrasonic microscopy", by W. Ngwa, W. Grill and T. Kundu presented at the *Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems* conference at the SPIE's 9<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, March 15-17, 2004, San Diego, California, 2004. The award was formally given at the SPIE's 10<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, in March 2005.

**Humboldt Research Prize from Germany** - also known as the **Senior Scientist Award** - 2003.

**Best Paper Award 2000 from SPIE** - The International Society for Optical Engineering or SPIE's 5<sup>th</sup> International Symposium on Nondestructive Evaluation and Health Monitoring of Aging Infrastructure, Newport Beach California, March 5-9, 2000. The paper on the near Lamb mode imaging co-authored by Kundu, Potel and de Belleval was selected as the best paper of the four NDE conferences combined. These four conferences are, "Nondestructive Evaluation of Aging Materials and Composites", "Nondestructive Evaluation of Aging Aircraft, Airports, and Aerospace Hardware", "Health Monitoring of the Highway Transportation Infrastructure", and "Utility and Pipeline Systems and Components". The award was formally given at the SPIE's 6<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, in March 2001.

**Best Student Paper Award 2001 from ASME** - Na, W. B., and T. Kundu, "Underwater Pipe Inspection using Guided Waves", presented at the ASME Symposium on NDE Challenges of the 21<sup>st</sup> Century, Theory and Practice in IMECE 2001 Conference, New York, Nov.11-16, 2001 was selected as the best paper among all papers where leading author is a graduate student.

**Elected ASCE Fellow**, August 2000.

**Elected ASME Fellow**, April 1999.

**Outstanding Honors Faculty**, May 2002, awarded by the University of Arizona and the Honors College for outstanding and dedicated service in guiding undergraduate students of the Honors College.

**Outstanding Asian Faculty Member of the Year**, Oct.1995, awarded by the Asian Faculty, Staff and Alumni Association of the University of Arizona for overall contributions of an individual in teaching, research and service.

**Alexander von Humboldt Fellowship Award** from Germany, Sept.1, 1989 - Aug.31, 1990. & July 1, 1996 - March 31, 1997.

**French Ministry of Education Fellowship and University Fellowships** from a number of European Universities (Chalmers University of Technology, Gothenberg, Sweden; Swiss Federal Institute of Technology, Lausanne, Switzerland; University of Technology of Compiègne, France; University of Bordeaux, France; Ecole Normale Supérieure (ENS), Cachan, France) during the period between 1989 and 2002

**Hortense Fishbaugh Memorial Scholarship**, U.C.L.A., academic year 1982-83. Ten graduate students from all disciplines of U.C.L.A. are awarded this scholarship every year based on their academic performance.

**Outstanding Master Student Award** from U.C.L.A. Engineering Alumni Association, March 1981, for ranking first among all Master students who graduated from the Engineering College of U.C.L.A. in 1980.

**Regents' Fellowship** from the University of California, academic years '79-80 and '80-81. UCLA, USA.

**President of India Gold Medal** for ranking first among all graduating engineers (~300) from I.I.T. Kharagpur, 1979.

**Jagdish Bose National Science Talent Search Scholarship**, July '74 to June '79. Calcutta, India. Eight high school graduates from a total of one million are selected for this award every year.

#### ACADEMIC EXPERIENCE:

Aug 1994 - present	Professor, Department of Civil Engineering and Engineering Mechanics, University of Arizona, Tucson, Arizona.
Aug 1989 - July 1994	Associate Professor, Department of Civil Engineering and Engineering Mechanics, University of Arizona, Tucson, Arizona.
Aug 1983 - July 1989	Assistant Professor, Department of Civil Engineering and Engineering Mechanics, University of Arizona, Tucson, Arizona.
Jan 1983 - July 1983	Postdoctoral Research Scholar, Department of Mechanics and Structures, University of California, Los Angeles, California.

#### VISITING / INVITED POSITIONS:

June 1989 - Aug 1989	Invited Professor, Chalmers University of Technology, Division of Mechanics, Gothenberg, Sweden.
Sept 1989 - Aug 1990	Alexander von Humboldt Fellow, Biology Department, University of Frankfurt, Frankfurt am Main, Germany.
Summer of '92 & '94	Summer Faculty Fellowship, Wright-Patterson Material Laboratory, Non Destructive Evaluation Branch Air Force Base, Dayton, Ohio.
Aug'94, May, June '95	Invited Scientist, Russian Academy of Science, Moscow.
May & June 1996	Invited Professor, Department of Civil Engineering, EPFL (Swiss Federal Institute of Technology, Lausanne), Switzerland.
July 1996 - Feb. 1997	Alexander von Humboldt Fellow, Biology Department, University of Frankfurt, Frankfurt am Main, Germany.
May 16 - June 15, 1997	Invited Professor, Materials Laboratory, University of Bordeaux, France.
June 16 - August 15, 97	Invited Professor, Department of Mechanical Engineering, University of Technology of Compiègne, France.
June 1 - July 31, 1999	Invited Professor, LESIR Laboratory, Electrical Engr. Dept., ENS Cachan, France.
August 1 - 15, 1999	Invited Scientist, Medical School of Aarhus University, Denmark.

June 1 - July 31, 2000	Invited Professor, LESIR Laboratory, Electrical Engr. Dept., ENS Cachan, France.
August 1 - 15, 2000	Invited Scientist, Medical School of Aarhus University, Denmark.
June 1 - July 31, 2001	Invited Professor, LESIR Laboratory, Electrical Engr. Dept., ENS Cachan, France.
August 1 - 18, 2001	Invited Scientist, Medical School of Aarhus University, Denmark.
June 1 - July 31, 2002	Invited Professor, LESIR Laboratory, Electrical Engr. Dept., ENS Cachan, France.
June 1 - June 30, 2003	Invited Professor, Department of Applied Physics, University of Leipzig, Germany.
July 1 - Dec 31, 2003	Invited US Senior Scientist as the winner of the Humboldt Research Prize, Biology Department, University of Frankfurt, Frankfurt am Main, Germany.
June 1 - June 30, 2004	Invited Professor, SATIE Laboratory, Electrical Engr. Dept., ENS Cachan, France.
July 1 - July 31, 2004	Invited US Senior Scientist, Biology Dept., Univ. Frankfurt, Frankfurt/Main, Germany.
May 1 - May 31, 2005	Invited Professor, SATIE Laboratory, Electrical Engr. Dept., ENS Cachan, France.
June 1 - July 31, 2005	Summer Faculty at the Air Force Research Laboratory, Dayton, Ohio
June and August, 2006	Summer Faculty at the Air Force Research Laboratory, Dayton, Ohio
July, 2006	Invited Professor, SATIE Laboratory, Electrical Engr. Dept., ENS Cachan, France

## PUBLICATIONS:

### BOOKS:

1. *Introductory Finite Element Method*, C. S. Desai and T. Kundu, Pub. CRC Press, 2001, ISBN: 0-8493-0243-9
- 1a. *Solution Manual for Introductory Finite Element Method*, C. S. Desai and T. Kundu, Pub. CRC Press, 2001, ISBN 0-8493-1289-2.
2. *Ultrasonic Nondestructive Evaluation: Engineering and Biological Material Characterization*, Ed. T. Kundu, Pub. CRC Press, 2004, ISBN 0-8493-1462-3.
- 2a. *Solution Manual for Ultrasonic Nondestructive Evaluation: Engineering and Biological Material Characterization*, T. Kundu, Pub. CRC Press, 2004, ISBN 0-8493-3261-3
3. *Ultrasonic Methods for Material Characterization*, Special Issue of the I2M (Instrumentation, Measurement and Metrology) Journal/Book Series, Volume 3, Guest Editor T. Kundu, Pub. Lavoisier, Paris, 2003, ISBN 2-7462-0843-1.
4. *DPSM - Distributed Point Source Method for Modeling Engineering Problems*, Eds. D. Placko and T. Kundu, in preparation, contract has been signed with John Wiley & Sons to be published in 2007.

## EDITOR OF CONFERENCE AND SYMPOSIUM PROCEEDINGS:

12. *Health Monitoring and Smart NDE of Structural and Biological Systems*, Ed. T. Kundu, Pub. SPIE, SPIE's 11<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, February 26 - March 2, 2006, San Diego, California, 2006.
11. *Health Monitoring and Smart NDE of Structural and Biological Systems*, Ed. T. Kundu, Pub. SPIE, SPIE's 10<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, March 6-10, 2005, San Diego, California, Vol. , 2005.
10. *Health Monitoring and Smart NDE of Structural and Biological Systems*, Ed. T. Kundu, Pub. SPIE, SPIE's 9<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, March 15-17, 2004, San Diego, California, Vol.5394, ISBN 0-8194-5311-0, 2004.
9. *Smart NDE and Health Monitoring of Structural and Biological Systems*, Ed. T. Kundu, Pub. SPIE, SPIE's 8<sup>th</sup> Annual

- International Symposium on NDE for Health Monitoring and Diagnostics, March 2-6, 2003, San Diego, California, Vol.5047, ISBN 0-8194-4852-4, 2003.
8. *Smart Nondestructive Evaluation for Health Monitoring of Structural and Biological Systems*, Ed. T. Kundu, Pub. SPIE, SPIE's 7<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, March 18-21, 2002, San Diego, California, Vol.4702, ISBN: 0-8194-4450-2, 2002
  7. *Advanced NDE for Structural and Biological Health Monitoring*, Ed. T. Kundu, Pub. SPIE, SPIE's 6<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, Newport Beach, California, 4-8 March, Vol. 4335, ISBN: 0-8194-4021-3, 2001.
  6. *Proceedings of the 7<sup>th</sup> ASME NDE Topical Conference*, Eds. C. Darvennes and T. Kundu, San Antonio, Texas, April 23-25, 2001, Pub. ASME, ISBN: 0-7918-1938-8, NDE-Vol.20, 2001.
  5. *Computer Methods and Advances in Geomechanics, Vols. 1 & 2*, Eds. C. S. Desai, T. Kundu, S. Harpalani, D. N. Contractor and J. Kemeny, Pub. Balkema, Netherlands, 2001. ISBN: (for Volume 1) 90 5809 1848 and (for Volume 2) 90 5809 1856, 2001.
  4. *Nondestructive Evaluation and Characterization of Engineering Materials for Reliability and Durability Predictions*, Eds. J. Qu and T. Kundu, Pub. ASME Press, AMD-Vol.240, NDE-Vol.18, ISBN: 0-7918-1910-8, 2000.
  3. *On the Recent Advances of the Ultrasonic Nondestructive Evaluation and Composite Material Characterization*, Eds. T. Kundu and V. K. Kinra, Pub. ASME Press, AMD-Vol.234, NDE-Vol.17, ISBN: 0-7918-1651-6, 1999.
  2. *Acousto-Optics and Acoustic Microscopy*, Eds. S. Gracewski and T. Kundu, Pub. ASME press, AMD-Vol.140, ISBN: 0-7918-1075-5, 1992.
  1. *Constitutive Laws for Engineering Materials: Theory and Applications, Vols. I & II*, Eds. C.S. Desai, E. Krempl, P.D. Kioussis and T. Kundu, Elsevier Publishers, ISBN: 0-444-01205-2 1987.

#### BOOK CHAPTERS

9. Placko, D. and T. Kundu, *Chapter 1: Basic Theory of Distributed Point Source Method (DPSM) and its Application to Some Simple Problems*, in *DPSM - Distributed Point Source Method for Modeling Engineering Problems*, Eds. D. Placko and T. Kundu, Pub. John Wiley & Sons, 2007.
8. Kundu, T. and D. Placko, *Chapter 2: Advanced Theory of DPSM – Modeling Multi-Layered Medium and Inclusions of Arbitrary Shape* in *DPSM - Distributed Point Source Method for Modeling Engineering Problems*, Eds. D. Placko and T. Kundu, Pub. John Wiley & Sons, 2007.
7. Kundu, T. R. Ahmad, A. Nasser and D. Placko, *Chapter 3: Ultrasonic Modeling in Fluid Media* in *DPSM - Distributed Point Source Method for Modeling Engineering Problems*, Eds. D. Placko and T. Kundu, Pub. John Wiley & Sons, 2007.
6. Banerjee, S. and T. Kundu, *Chapter 4: Advanced Applications of Distributed Point Source Method-Ultrasonic Field Modeling in Solid media* in *DPSM - Distributed Point Source Method for Modeling Engineering Problems*, Eds. D. Placko and T. Kundu, Pub. John Wiley & Sons, 2007.
5. Kundu, T., *Nondestructive Evaluation*, Kirk-Othmer Encyclopedia of Chemical Technology (Online Edition, URL address <http://www.mrw.interscience.wiley.com/kirk/articles/nondbray.a01/bibliography-fs.html>, Posted in Dec., 2004.), Pub. John Wiley and Sons, 2004.
4. Kundu, T., *Chapter 1: Mechanics of Elastic Waves and Ultrasonic NDE*, in *Ultrasonic Nondestructive Evaluation: Engineering and Biological Material Characterization*, Ed. T. Kundu, Pub. CRC Press, pp.1-142, 2004
3. Placko, D. and T. Kundu, *Chapter 2: Modeling of Ultrasonic Field by Distributed Point Source Method*, in *Ultrasonic Nondestructive Evaluation: Engineering and Biological Material Characterization*, Ed. T. Kundu, Pub. CRC Press, pp.143-202, 2004
2. Kundu, T., *Chapter 4: Guided Waves for Plate Inspection*, in *Ultrasonic Nondestructive Evaluation: Engineering and Biological Material Characterization*, Ed. T. Kundu, Pub. CRC Press, pp.223-310, 2004
1. Kundu, T., *Chapter 12: Nondestructive Testing Techniques for Material Characterization*, in *Modeling in Geomechanics*, Eds. M. Zaman, G. Gioda and J. Booker, Pub. John Wiley & Sons, pp. 267-298, 2000

#### PAPERS IN REFEREED JOURNALS:

92. Jensen, A. S, U. Baandrup, J. M. Hasenkam, T. Kundu, and C. S. Jorgensen, "Distribution of the Microelastic Properties

within the Human Anterior Mitral Leaflet", *Circulation*, in press, 2006

91. Kundu, T., S. Banerjee, S. and K. V. Jata, "An Experimental Investigation of Guided Wave Propagation in Corrugated Plates Showing Stop Bands and Pass Bands", *Journal of the Acoustical Society of America*, in press, 2006.
90. Kundu, T., J. -P. Lee, C. Blase and J. Bereiter-Hahn, "Acoustic Microscope Lens Modeling and Its Application in Determining Biological Cell Properties from Single and Multi-Layered Cell Models", *Journal of the Acoustical Society of America*, in press, 2006.
89. Banerjee, S., and T. Kundu, "Symmetric and Anti-symmetric Rayleigh-Lamb modes in Sinusoidally Corrugated waveguides: An Analytical Approach", *International Journal of Solids and Structures*, in press, 2006.
88. Banerjee, S., and T. Kundu, "Elastic Wave Propagation in Sinusoidally Corrugated Waveguides", *Journal of the Acoustical Society of America*, Vol. 119(4), pp. 2006-2017, 2006
87. Banerjee, S., T. Kundu, and D. Placko, "Ultrasonic Field Modelling in Multilayered Fluid Structures Using DPSM Technique", *ASME Journal of Applied Mechanics*, in press, 2006.
86. Ahmad, R., T. Kundu, and D. Placko, "Modeling of Phased Array Transducers", *Journal of the Acoustical Society of America*, Vol. 117, pp. 1762-1776, 2005.
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4. Mal, A.K., T. Kundu and P.C. Xu, "On the Surface Response of a Multilayered Solid to a Dislocation Source," Proceedings of ASME Symposium on Earthquake Source Modelling, Ground Motion and Structural Response, S.K. Datta, Ed., San Antonio, Texas, No. AMD-60, 29-48, 1984.
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1. Mal, A.K., T. Kundu and P.C. Xu, "Ground Motion Calculations," Proc. of ASME Symposium on Earthquake Ground Motion and Its Effects on Structures, S.K. Datta, Ed., Phoenix, AZ, USA, No. AMD-53, 21-40, 1982.

#### PAPERS UNDER REVIEW FOR JOURNAL PUBLICATION:

1. Banerjee, S., T. Kundu and N. A. Alnuaimi, "DPSM Technique for Ultrasonic Field Modelling Near Fluid-Solid Interface", Ultrasonics, 2006.
2. Banerjee, S. and T. Kundu, "Ultrasonic Field Modelling in Plates immersed in Fluid", IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2006.
3. Banerjee, S. and T. Kundu, "Computationally efficient technique for calculating Elastic wave field in Multilayered Solid Structures: A Mesh-free Semi-Analytical Approach", Physical Review B, 2006.
4. Banerjee, S. and T. Kundu, "Scattering of Ultrasonic Waves by Internal Anomalies in Plates Immersed in a Fluid", Optical Engineering, 2006.

#### PATENT

1. Worldwide patent publication number (WO 2004/044790 A1, published in 2004), "Method for evaluating a physical quantity representing an interaction between a wave and an obstacle", D. Placko, N. Liebeaux and T. Kundu ; French Patent Application Number BF 02 14108, "Procédé pour évaluer une grandeur physique representative d'une interaction entre une onde et un obstacle", November 8, 2002, institutes involved, CNRS, ENS Cachan and University of Arizona.

Patent Detail in French: Inventeurs: D.PLACKO, N.LIEBEAUX, T.KUNDU, Titre: "Procédé pour évaluer une grandeur phys

2. Patent Application Number 03782525.4-2201-FR0303323, Date 12-23-2005, "Procédé pour Evaluer une Grandeur Physique Representative D une Interaction entre und onde et un obstacle", ", D. Placko, T. Kundu, N. Liebeaux and A Cruau. institutes involved, ENS Cachan, CNRS, and University of Arizona.

Patent Detail in French: Inventeurs: D.PLACKO, T.KUNDU, N.LIEBEAUX, A.CRUAU, Titre: "Procédé de modélisation de

#### RESEARCH GRANT AWARDS

(For joint Projects names of co-investigators are given in parenthesis after the title):

Agency: Air Force Research Laboratory, Dayton OH & Center for Nondestructive Evaluation, Ames, Iowa

Amount: \$100,000 Period: 6/1/2005 - 12/31/2006

Title: Ultrasonic Technique for Structural Health Monitoring – Experimental and Analytical Investigation

Agency: National Science Foundation (OISE-0352680)

Amount: \$28,780, Period: 4/1/2004 - 3/31/2007

Title: US-India Cooperative Research: Health Monitoring and Retrofitting of Infrastructure

Agency: National Science Foundation (CMS Program)

Amount: \$37,010, Period: 9/15/04 - 9/14/05

Title: Joint U.S. India Workshop on Advanced Sensing Systems and Smart Structures Technologies (Joint Project, P.I. M. P. Singh of Virginia Polytechnic and State Univ. & Co-P.I.: T. Kundu)

Agency: National Science Foundation (CMS-9901221)

Amount: \$315,335, Period: 10/1/99 - 9/30/05

Title: Development of Non-Contact Sensors for Pipe Inspection by Lamb Wave.

Agency: National Optical Astronomy Observatories (NOAO)(FRS #340740)



- Amount: \$15,550, Period: 8/2/04 - 1/2/05  
Title: Static and Dynamic Analysis due to Gravity and Wind Load for the Advanced Technology Solar Telescope.
- Agency: National Optical Astronomy Observatories (NOAO) (FRS #4177800)  
Amount: \$25,912, Period: 7/18/03 - 5/31/04  
Title: Static and Dynamic Analysis due to Gravity and Wind Load for the Advanced Technology Solar Telescope and the Giant Segmented Mirror.
- Agency: Alexander von Humboldt Foundation of Germany (Senior Scientist Research Prize)  
Amount: Approximately \$75,000, Period: 6/1/03 - 7/31/04  
Title: Ultrasonic/Acoustic Microscopical Analysis of Multi-Layered Biological Cells
- Agency: National Science Foundation (INT-9912549)  
Amount: \$16,875, Period: 7/15/00 - 12/31/02  
Title: US-France-Sweden Cooperative Research: Ultrasonic Sensors Design, Fabrication and Testing.
- Agency: National Science Foundation (CMS-9800345)  
Amount: \$149,986, Period: 7/98 - 12/02  
Title: Ultrasonic Evaluation of Delamination Defects at FRP/Concrete Interface.  
(Joint Project, Co-P.I.s: T. Kundu & M. Ehsani)
- Agency: National Science Foundation, Sandia Lab, Boeing Electronic and Hughes Missile Systems  
Amount: \$435K(NSF- 290K, Sandia - 45K, Boeing - 60K, Hughes-40K), Period: 9/98 - 8/01  
Title: Testing and Constitutive Modeling for Design and Reliability in Electronic Packaging.  
(Joint Project, Co-P.I.s: C. S. Desai, T. Kundu, J. L. Prince & M. Rassaian)
- Agency: Transportation Research Board  
Amount: \$67,602, Period: 8/98 - 7/99  
Title: A Novel Approach for Prediction of Remaining Life of Concrete Bridge Structures  
(Joint Project, Co-P.I.s: C. S. Desai & T. Kundu)
- Agency: National Science Foundation (CMS-9523349 & 9896182) and  
Electric Power Research Institute (W08031-14 & EP-P241/C110)  
Amount: \$267K(NSF- 152K, EPRI - 115K), Period: 9/95 - 12/00  
Title: Lamb Wave Sensors for Inspecting Civil Infrastructures.
- Agency: National Science Foundation (CMS-9622403)  
Amount: \$90,000 (includes \$10,000 REU support), Period: 9/96 - 8/98  
Title: Non-Destructive Evaluation of Structures Retrofitted with Fiber Composites.  
(Joint Project, Co-P.I.s: T. Kundu & M. Ehsani)
- Agency: North Atlantic Treaty Organization (NATO, HTECH.LG931353)  
Amount: 1,189,000 Belgian Francs (US \$35,873) & Univ. of Az \$1,000, Period: 1/94 - 1/96  
Title: Imaging and Property Determination of 3-D Objects by Acoustic Microscopy
- Agency: National Science Foundation  
Amount: \$109,000 (Univ. of Az Matching Fund \$33,000), Period: 8/93 - 6/95  
Title: Acoustic Microscopy for Detecting Kissing and Slip Bonded Interfaces.
- Agency: National Science Foundation  
Amount: \$400,000, Period: 9/93 - 8/96  
Title: Unified Constitutive Modelling, Testing and Computer Design for Semiconductor Devices with Emphasis on Interface Behavior (Joint Project, P.I.: C. S. Desai, Co-P.I.s: T. Kundu and J. Prince)
- Agency: MER Corporation, Tucson  
Amount: \$5,800, Period: 2/93 - 2/95.  
Title: Stress Analysis at the Metal-Carbon Composite Interface
- Agency: National Research Council of National Academy of Sciences  
Amount: \$11,100, Period: 10/93 - 6/94

Title: The Application of the Acoustic Microscopy Methods for Characterization of Subsurface Defects.

Agency: Air Force Office of Scientific Research  
Amount: \$20,000, Period: 1/93 - 12/93,  
Title: Detection of Internal Defects in Multilayered Plates by Lamb Wave Acoustic Microscopy.

Agency: Universal Technology  
Amount: \$10,000 (equipment), Period: 6/92 - 12/92,  
Title: Ultrasonic Transducer Characterization for Nondestructive Testings.

Agency: National Science Foundation  
Amount: \$182,826, Period: 9/91 - 2/94,  
Title: Constitutive Modelling of Mechanical Response of Materials in Semiconductor Devices with Emphasis on Interface Behavior (Joint Project, P.I.: C. S. Desai, Co-Investigator: T. Kundu and J. Prince)

Agency: National Science Foundation and University of Arizona  
Amount: \$99,000 (Univ of Az: \$20,000), Period: 9/88 - 2/91, DMC-8807661  
Title: Acoustic Actuators for Quality Control in Manufacturing (Joint Project, P.I.: T. Kundu, Co-Investigator: A. Mahalanobis)

Agency: National Science Foundation  
Amount: \$59,138, Period 6/85 - 12/87, MSM-8502120  
Title: Computation of the Dynamic Stress Intensity Factor of an Interfacial Finite Crack in a Plate.

Agency: National Science Foundation  
Amount: \$170,257, Period: 9/87 - 2/90, CES-8711764  
Title: Constitutive Modelling of the Dynamic Anisotropic Response of Soils (Joint Project, P.I.: C.S. Desai, Co-Investigator: T. Kundu)

Agency: Alexander von Humboldt Foundation, Germany  
Amount: \$50,000 (A fellowship to T. Kundu for his stay in Germany), Period: 9/89 - 8/90 & 6/96 - 3/97.  
Title: Study of Cell Metabolic Response by its Acoustic Signature

Agency: University of Arizona (Small Grants Program)  
Amount: \$5000, Period: 1/89 - 12/89  
Title: Acoustic Microscopy for Crack Detection in Materials

Agency: University of Arizona (International Project Development Fund)  
Amount: \$2000, Period: 7/89 - 6/90  
Title: An International Collaboration on Acoustic Microscopy

Agency: Air Force Office of Scientific Research  
Amount: \$18,000, Period: 8/87 - 6/88  
Title: Measurement of Damage and Modelling of Behavior of Joints (Joint Project, P.I.: C.S. Desai, Co-Investigator: T. Kundu)

Agency: Intel Corporation, California  
Amount: Equipment Grant for an Intel System 310  
Title: Computer Simulation of the Dynamic Response of a Structure during an Earthquake.

## GRADUATE STUDENT ADVISING:

### Ph.D. STUDENTS

Samik Das (current) – Research topic – Modeling of Elastic Wave Propagation in Corrugated and Tiled Panels

Tamaki Yanagita (current) – Research topic – Differential Acoustic Microscopy Modeling by DPSM technique

Tri Miller (current) - Research Topic - Nondestructive Inspection of Corroded Reinforced Concrete.

Cac Minh Dao (current) – Research Topic: Elastic Waves for Underwater communication, (Mr. Dao is the recipient of the Bill Gates Millenium Scholarship, 2000, 2001, 2002).

Sourav Banerjee (2005) - Dissertation: Elastic Wave Propagation in Corrugated Wave Guides.

Rais Ahmad (2005) - Dissertation: Wavelet Analysis and Ultrasonic Modeling for Pipe Inspection.

Joon-Pyo Lee (2005) – Dissertation: Ultrasonic Transducer Modeling for Acoustic Microscopy and its Application in Biological Material Characterization.

Nasser A. Alnuaimi (2004) - Dissertation: Modeling of Ultrasonic Transducer in Homogeneous and Non-Homogeneous Medium by DPSM. Currently he is a Professor in Doha University in Qatar.

Manu Dube (2004) - Dissertation: Constitutive Modeling of Joining Materials in Electronic Packaging

Dongshan Guo (2001) - Dissertation: Pipe inspection by cylindrically guided waves.

Won-Bae Na (2001) - Dissertation: Nondestructive Evaluation of Bar-concrete Interface in Reinforced Concrete Structures (Co-advisor Dr. M. Ehsani). Currently Dr. Na is an Assistant Professor of Ocean Engineering Department, Pukyong National University, Busan, South Korea.

Michael Scott Keller (2001) - Dissertation: A Novel Approach to Predict Current Stress-Strain Response of Cement Based Materials (Co-advisor with Dr. C. S. Desai).

Zhichao Wang (2001) - Dissertation: Disturbed State Constitutive Modeling and Testing of Solders in Electronic Packaging (Co-advisor with Dr. C. S. Desai)

Saeed Towfighi (2001) - Dissertation: Elastic Wave propagation in curved plates and its application in the nondestructive inspection of reinforced concrete pipes (Co-advisor with Dr. M. Ehsani).

Liling Chen (2001) - Dissertation: Lamb Wave Propagation in Multi-Layered Pipes.

Triguna Ghosh (1997) - Dissertation: Nondestructive Characterization of Plates with an Emphasis on Civil Infrastructure.

Wang Zhang (1997) - Dissertation: Adaptive Stochastic Finite Element Procedure of Electronic Packaging Problems using Disturbed State Concept (Co-advisor with Dr. C. S. Desai)

Terry J. Dishongh (1996) - Disturbed State Modelling of Electronic Packaging Materials (Co-advisor with Dr. Desai)

Mohammad A. Awal (1995) - Dissertation: Low Frequency Acoustic Microscopy for Material Characterization.

Wei Yang (1994) - Dissertation: Interaction of Acoustic Waves and Multi-Layered Composite Plates Immersed in Water.

C. Basaran (1994) - Dissertation: Damage Propagation in Interfaces under Thermal and Mechanical Loading. (Currently he is a faculty member of the Civil Engineering Department at the State University of New York, Buffalo, Co-advisor with Dr. C. S. Desai).

J. Chia (1994) - Dissertation: Constitutive Modelling of Interfaces under Thermal Cycles. (Co-advisor with Dr. C. S. Desai).

S. V. Jagannath (1991) - Dissertation: Correlation Between Mechanical and Ultrasonic Responses for Anisotropic Behavior of Soils (Co-advisor with Dr. C.S. Desai).

C. Romanel (1989) - Dissertation: Soil-Structure Interaction Analysis for Buried Structures (Currently he is a Professor of the Civil Engineering Department at the University of Rio-de-Janerio, Brazil )

Ravi P. Mathur (1989) - Dissertation: A new Hybrid Method for Three Dimensional Dynamic Soil-Structure Interaction.

M. R. Karim (1988) - Dissertation: Transient Response of Laminated Composites with Subsurface Cracks.

***Ph.D. students in Foreign Institutes***

(for the following two Ph.D. students T. Kundu served as the Co-Advisor as well as External Examiner and co-authored papers with them from their Ph.D. dissertation)

Wilfred Ngwa (2004) - Dissertation: Soft Matter Acoustics - Principal Advisor: Professor Wolfgang Grill, University of Leipzig, Germany.

Nicolas Liebeaux (2002) - Dissertation: Contribution to electromagnetic sensors modeling. Applications to eddy currents NDE (Contribution à la modélisation de capteurs électromagnétiques. Application au contrôle non destructif par courants de Foucault) - Principal Advisor: Professor Dominique Placko, Ecole Normale Supérieure de Cachan, France

## M.S. STUDENTS

Milos Vasiljevic (current)

Tri Miller (2002) - Thesis - Nondestructive Inspection of Corrosion and Delamination at the Concrete-Steel Reinforcement Interface

Joon-Pyo Lee (2001) - Thesis - Ultrasonic Transducer Modeling in Homogeneous and Non-Homogeneous Media.

Cac Minh Dao (2000) – Thesis: Characterization of Adhesive Joints by Ultrasonic Lamb Wave and Laser Holography Techniques.

Young-Chul Jung (1999) - Thesis: Detection of Defects in Concrete using Lamb Waves. Winner of the Best MS Thesis Award at the University of Arizona, (Co-advisor Dr. M. Ehsani)

Dongshan Guo (1998) – Thesis: C-Scan and L-Scan Generated Images of the Concrete/GFRP Composite Interface

Amritendu Maji (1997) - Thesis: Detection of Kissing Bonds by Lamb Waves.

Triguna Ghosh (1995) - Thesis: Material Characterization by Acoustic Microscopes -  $V(f)$  and  $V(z)$  Curves.

L. Xu (1992) - Thesis: Stress Singularities at Crack Corners.

C. V. Cao (1991) - Master's Report: Determination of Stress Intensity Factor: J-Integral Method Versus Stiffness Derivative Method.

M. A. Awal (1989) - Thesis: Transient Response of Delamination, Intersecting and Transverse Cracks in Layered Composite Plates

G. Wang (1988) - Thesis: Size Effect on Damage in Progressive Softening Process for Simulated Rock. (Co-advisor with Dr. C.S. Desai)

Rudra Pratap (1987) - Thesis: A New Residual Finite Element Technique for Elastodynamic Problems. Currently he is a Professor at the Indian Institute of Science, Bangalore.

C. Romanel (1987) - Thesis: A Hybrid Finite Element Technique for Soil-Structure Interaction Analysis. Currently he is a Professor of the Civil Engineering Department at the University of Rio-de-Janeiro, Brazil.

Tasnim Hassan (1985) - Thesis: A Numerical Study of the Dynamic Response of Interface Cracks in a Layered Plate. Currently he is a Professor of the Civil Engineering Department at the North Carolina State University.

## VISITING RESEARCHERS AND POSTDOCS:

Following scientists came to the University of Arizona to collaborate with T. Kundu.

Dr. O. Lobkis (1993-94, 1 year) - Research Scientist, Russian Academy of Science, Moscow.

Dr. Y.-H. Cha (1993-94, 9 months.) - Prof., Mech. Engr., Cho-Sun Univ., Kwang Ju, South Korea.

Dr. K. Maslov (1994-95, 8 months.) - Research Scientist, Russian Academy of Science, Moscow.

Dr. Demin Wang (1994-95, 1 year) - Professor, Northwestern Polytech. Univ., Xi'an, China.

Wang Zhichao (1994-95, 1 year) - Associate Professor, Jilin University, Changchun, China.

Dr. P. V. Zinin (1995, 1 month) - Research Scientist, Russian Academy of Science, Moscow.

Dr. H. Jang (2001, 6 months and 1995, 1 year) -Professor, Civil Eng., Pukyong National University, Pusan, South Korea

#### **JOURNAL ADVISORY BOARD:**

International Journal of Geomechanics, 2001-present.

International Journal for Numerical and Analytical Methods in Geomechanics, 1998-2001

#### **TECHNICAL COMMITTEE MEMBERSHIP:**

Executive Committee Member and Current Chairman of the ASME NDE (Nondestructive Evaluation) Engineering Division, Served as the Secretary and Vice-Chairman of this Division from 2001 to 2003 and as the Program Representative for the period 1999-2002.

ASME Materials & Structures Group Representative for the IMEC&E (International Mechanical Engineering Congress and Exposition) 2002 (Materials and Structures Group consists of four Engineering Divisions - Materials, Pressure Vessels and Piping (PVP), Pipeline and NDE Engineering)

ASME Applied Mechanics Division, Dynamic Behavior of Materials Committee, 1995-present.

#### **SOCIETY MEMBERSHIP**

Fellow of ASCE (American Society of Civil Engineers)

Fellow of ASME (American Society of Mechanical Engineers)

Life Member of AvHAA (Alexander von Humboldt Association of America)

Member, AAM (American Academy of Mechanics)

Member, ASNT (American Society of Nondestructive Testing)

Member, ASA (Acoustical Society of America)

Member, SPIE (the International Society for Optical Engineering)

Secretary and Member of the Board of Directors of IACMAG (International Association for Computer Methods and Advances in Geomechanics): 1990-Present.